PALMAE MALESICAE—XVIII*

Two New Calamoid Genera of Malaysia

By C. X. FURTADO

WHILE STUDYING specific affinities in the genus Calamus with the view to revising the Malayan material in the Singapore herbarium, a few species were noticed to be so anomalous as to justify their separation from Calamus; and as they do not form a uniform group, two new genera have been proposed here, namely CORNERA and SCHIZOSPATHA. The first genus is named after Dr. E. J. H. Corner of the University of Cambridge, England, who, when Assistant Director of the Botanic Gardens, Singapore, contributed much to our knowledge of the Malayan vegetation in general; the second name has been coined to emphasize the fact that in this calamoid genus the spadix branches emerge by puncturing the spathes.

The species in both these genera are climbing and their spadices are much abbreviated, in Cornera terminating each in a short filiform appendix. None of the species are cirriferous, but one species in Cornera (*C. conirostris*) produces a short cirrus which however bears also abbreviated leaflets to make the leaves sub-cirriferous in the terminology adopted for describing rattans. The primary spathes, though in texture and armature reminding one of Daemonorops and of its relatives, are conspicuously tubular at least in part, the leaf-sheaths are flagelliferous and the female calyx is as nearly as long as the corolla—three characters that show the clear affinities of these two genera with Calamus.

The primary spathes in Cornera are armed, coriaceous, ventricose or inflated towards the apex which in each spathe terminates often in an ear-shaped limb having a long or short beak. The primary branches of the spadix have each a stout axis which, growing in a straight line with the main axis below, appears as if it were the continuation of the latter, while the main axis above is so much more slender than the branch-axis that it appears to be a true branch—characters not known to occur in any other calamoid genus. The axes of the spikelets which are short and congested in each spadix-branch, are also thick; and the flowers

---

* The previous paper entitled THE GENUS DAEMONOROPS OF MALAYA, published in this Bulletin XIV Part 1 (1953) 49–147, should have borne also the general title as follows: PALMAE MALESICAE—XVII.

(male and female) and the fruit are also very much larger than in any other rattan genus. The fruit scales are not channelled in the middle.

The spadices in Schizospatha are much more abbreviated than those in Cornera and do not have a filiform appendix at the end. The primary spathes are papyraceous, often fragile, imbricate, longer than the included internode and the axillary branch, and gradually shorter towards the end of the spadix; this means that each spathe covers partly or entirely the one above, and that the longest internode and the largest spathe are the lowermost in the spadix, and the shortest are at the apex. Often the terminal portion of the spadix is abnormal; this may contain two or more spathes which though amplexicaul at the base, are open and cymbiform, each subtending in its axil an abortive or fertile spikelet. This entire abnormal part is wholly enclosed, before anthesis, in a large cymbiform, amplexicaul spathe. The tubular primary spathes do not dehisce but remain closed so that the spadix branches with their spikelets emerge by puncturing their respective axillant spathe on its dorsal side, a mode of orientation for spadix branches not known in any other rattan genus. Later, as the spikelets develop and the spadix bends, the spathes become torn and appear to have dehisced naturally, but the basal spathes will often reveal the true mode of emergence of the spadix branches. The spathes may be entirely unarmed or occasionally the lowermost spathe is armed at the base and obscurely so in the lamina.

CORNERA Furtado **gen. nov.**

Palmae scandentes, dioicae, flagelliferae. *Frondes* paripinnatae, subimparipinnatae vel subcirriferae. *Spadices* parvi, frondibus breviores vel eis aequilongi, in parte basali valde crassi, apice in appendiculum brevi unguiculatum exeuntes, feminei masculis similes sed minores, 1–3 ramis arrectissimis in axis directione principalis productis, crassis praediti. *Spathae primariae* persistentes, aculeatae, basi tubulares, apicem versus gradatim dilatatae, auriculiformiter explanatae, summo triangulariter truncatae vel acuminatae, vel longe rostratae. *Spiculae* breves, axi crassae, congestae. *Flores feminei,* neutri et masculi maximi, 5–10 mm. longi, ut in Calami speciebus dispositi. *Involucrophora* cupuliformia vel infundibuliformia; involucra conformia. *Perianthium fructiferum* campanulatum, ad basin fere usque divisum, haud pedicellatum. *Fructus* elliptici vel ovato-oblongi, inter species calamoideas maximi, 2·5–4 cm. alti, 2 cm. in diam.; squamis secus dorsum haud canaliculatis. *Semina* alte ruminata vel homogenea.

Distributio: Species hujus generis adhuc tres cognitae, in Malaya et in Borneo incolunt.

Species Typica: *C. pycnocarpa* Furtado.

KEY TO THE SPECIES

(a) Leaflets mealy white beneath (Seed deeply ruminate)
C. Lobbiana (Becc.) Furtado.

(aa) Leaflets not mealy white beneath

(b) Leaves 2–3 m. long, subcirriferous. Leaflets many, equidistant except in apical part of the leaf. Leaf-sheaths armed with many spines especially at the mouth. Fruit dark; seed deeply ruminate
C. conirostris (Becc.) Furtado.

(bb) Leaves ± 50 cm. long or less, almost as long as the spadices, paripinnate or rarely subimparipinnate, not subcirriferous. Leaflets few, 6–8 in all, inequidistant, 4 terminal approximate, the two central in the terminal group of leaflets being shortly united at base; other leaflets seated towards the base. Leaf-sheaths armed with a few small thorns, mouth unarmed. Fruit with brownish scales; seed homogeneous
C. pycnocarpus Furtado.

Enumeration of the Species

1. Cornera conirostris (Becc.) Furtado comb. nov.

Calamus conirostris Becc. in Hook. f., Fl. Brit. Ind. VI (1893) 461; Ridl., Mat. Fl. Mal. Pen. II (1907) 205; Becc. in Ann. Roy. Gard. XI (1908) 480 t. 220., Ridl., Fl. Mal. Pen. V (1925) 60: **Basinym**

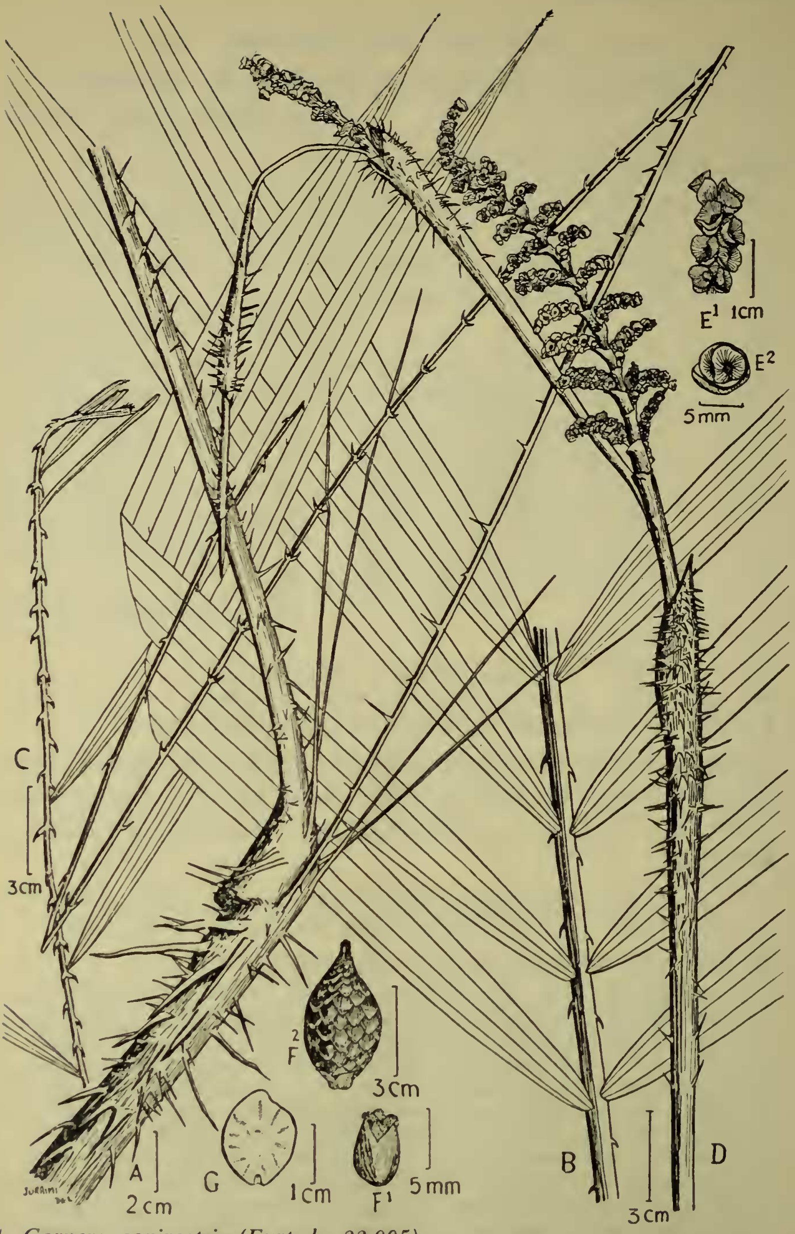
C. brachystachys Becc. *sensu* in Ann. cit. (1908) 485 t. 222 quoad frondem tantum; Merr., Bibl. Enum. Born. Pl. (1921) 73 pro parte (ex altera parte = *C. Lobbiana*).

Stem scandent, tufted 6–10 m. long, 2·5–3·5 cm. thick including leaf-sheaths. *Leaf-sheaths* flagelliferous, armed with unequal, spreading, somewhat deflexed, straw-coloured, laminar spines, largest ones being 2–5 cm. long, those near the mouth being erect, narrower, linear, up to 18 cm. long. *Leaves* 2·5–3 m. long (including the 30–50 cm. long yellowish petiole), ending in a short, stout, strongly clawed cirrus bearing diminutive inequidistant leaflets. *Leaflets* ensiform, 1–3 costate, equidistant for the most of the lower part, 2–6 cm. apart, opposite or subopposite, largest 40–45 cm. long, 2·5–3 cm. broad.

Spadix 40–60 cm. long including a short appendix, with one or two flower-bearing branches; the lower branch stout, arrect bearing on each side about 7 reflexed, 2·5–3·5 cm. long spikelets. *Fruit* large about 3 cm. long, 2 cm. in diam., ovoid, conic, long beaked, covered with 15 series of black, shining scales, sometimes yellowish at base.

MALAYA: Perak, Tapah (Furtado 33,095; Ridley 14,113).

BORNEO: Sarawak, loc. incert., probably Kuching (Hewitt in 1906, vern. nom. *Rotang Tedong*); Mount Matang (Beccari leaf in t. 222).



1. Cornera conirostris (Furtado 33,095).

A, Petioli pars basalis cum vagina et flagello. B, Frondis fragmentum medianum. C, Frondis cirrus cum foliolis diminutis. D, Spadix. E^1, Spiculae pars ut dispositio involucrophori involucrique appareant. E^2, Involucrum ut ejusdem dispositio in involucrophoro appareat. F^1, Flos femineus ad anthesin. F^2, Fructus. G, Semen verticaliter discissum.

This species was not recorded from Borneo, Beccari having referred the Bornean sterile material of this species to *Calamus brachystachys*. Hewitt's collection has a fruiting spadix and representative portions of a leaf which shows that *Cornera conirostris* does occur in Borneo.

Beccari had apparently intended to include Scortechini's collection from Gopeng, Perak, among the syntypes of the basinym of this species, but this collection was not cited in the original publication by Hooker who, while condensing Beccari's descriptions for his Flora of British India, saw in the Kew herbarium only Kunstler's specimen and none from Scortechini's collection. The plate given by Beccari (1908) is based entirely on Scortechini's specimens.

2. **Cornera Lobbiana** (Becc.) Furtado **comb. nov.**

Calamus Lobbianus Becc. in Hook. f., Fl. Brit. Ind. VI (1893) 462; Ridl., Mat. Fl. Mal. Pen. II (1907) 204; Becc. in Ann. Roy. Bot. Gard. Calc. XI (1908) 482 t. 221; Ridl., Fl. Mal. Pen. V (1925) 59: (**Basinym.**).

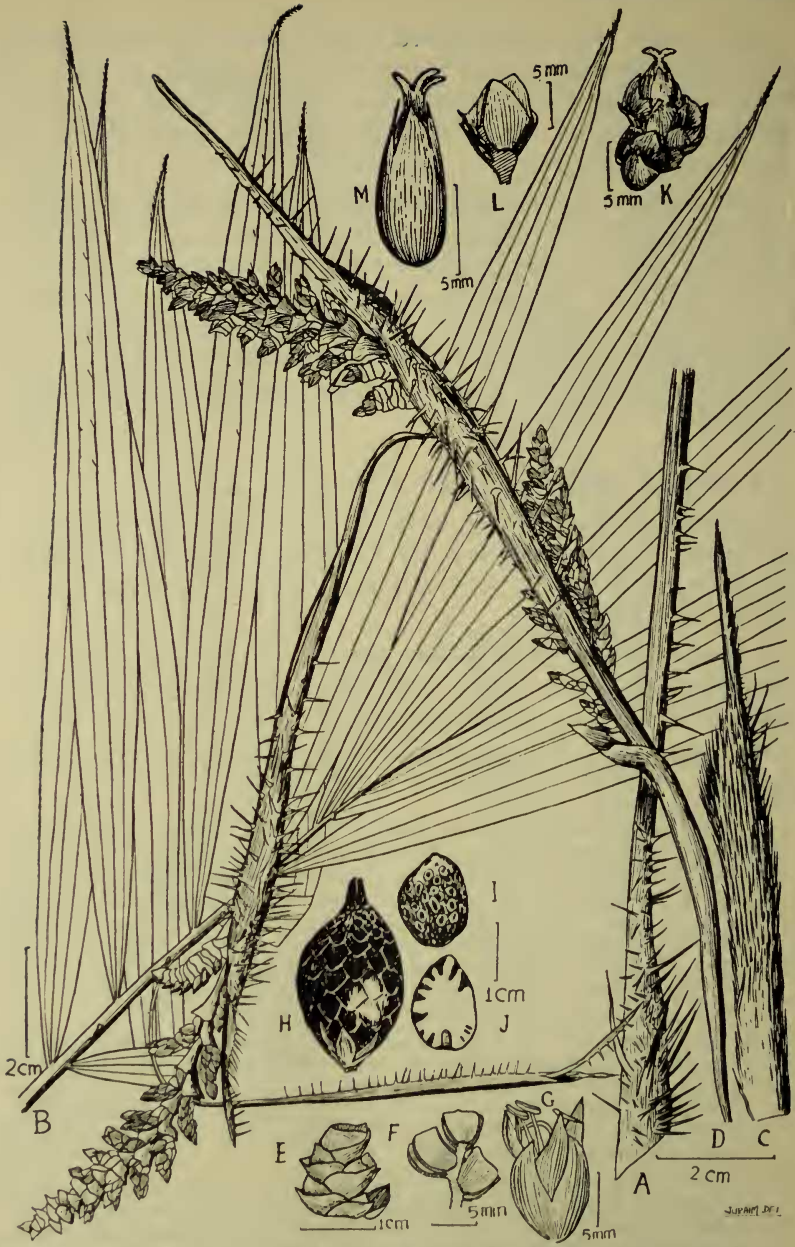
C. brachystachys Becc. in Rec. Bot. Surv. Ind. II (1902) 215; et in Ann. cit. (1908) 485 t. 222 quoad spadicem tantum (quoad frondem = *C. conirostris*): **syn. nov.**

C. melanocarpus Ridl. in Trans. Linn. Soc. Lond. III (1893) 392.

Stem short, solitary, 1–1·5 m. long, 2·5–3 cm. through with sheaths, scandent or semi-scandent. *Leaf-sheaths* sometimes flagelliferous especially when old and climbing, densely armed with unequal ascending or spreading, light coloured spines, the largest being 2–5 cm. long. *Leaves* non-cirriferous, 1·25–2 m. long. *Leaflets* paripinnate, ensiform, equidistant, conspicuously white beneath, 3-costulate, sometimes caudiculate at apex, 3–5 cm. apart, opposite or subopposite, the largest ones about 40–45 cm. long, 3·5 cm. broad, the two terminal shortly connate at base.

Spadix 40–60 cm. long including the appendix, usually divided into 1–3 erect branches bearing short congested spikelets, the female spadix being shorter and less branched; primary spathes long-beaked, spiny. *Fruit* large, 3 cm. long, 2 cm. in diam., ovoid conic, beaked, covered with black, yellowish at base, shining scales arranged in 15 longitudinal series, sometimes.

MALAYA: Kelantan, Sungai Keteh (Nur 11.987). **Pahang,** Bukit Kuman in Raub (Burn-Murdoch, comm. sub Ridley's no. 13.298); Tahan River (Mat on 21–IX–1893, vern. nom. *Rotan Chin Chin*); Pulau Tawar (Ridley on 10–VI–1891, Holotype of *C. melanocarpus*); Kuala Lipis at Ulu Chimeras (Burkill & Haniff 15.685). **Negri Sembilan,** Beremban by Sungai Bendol (Furtado 33.123, vern. nom. *Rotan Ayer*, both male and fruiting under the same number): Gunong Angsi, alt. 670 m. (Nur 11.598). **Johore,** between Gunong Belumut and Gunong Bechua, alt. 750 m. (Holttum 10.845): Castlewood (Ridley in VI–1904): Sungai Kayu Ara (Corner & Furtado 29.493):



2. Cornera Lobbiana (A–G: Furtado 33,123; H–J: Furtado 33,123a; K–M: Ridley s.n.).

A, Pars petioli. B, Fragmentum frondis apicale. C, Spatha primaria basalis. D, Spadix sine spatha basali. E, Spicula. F, Eadem spicula verticaliter discissa ut dispositio involucrophori involucrique appareat. G, Flos masculus. H, Fructus. I, Semen. J. Semen verticaliter discissum. K, Spicula feminea. L, involucrophorum cum spathella et involucro verticaliter discissum. M, Flos femineus cum calyce paulo longiore quam corolla.

Mawai-Jemaluang Road (Corner on 1–IX–1940); Batu Pahat (Ridley in IX–1900); Ulu-Batu Pahat at Kampong Chin Chin (Lake & Kelsall in 1892, vern. nom. *Rotan Manana*); Gunong Panti (Ridley on 9–XII–1892); Ulu Sungai on Gunong Panti, alt. ± 100 m. (Nur (20,013). **Selangor**, Ginting Simpah (Hume 9,476); Petaling (Ridley on 5–VII–1889); Pahang Track (Ridley 8,776). **Singapore**, Selitar (Goodenough on 3–1–1889 and on 12–VIII–1890, spadices only; Ridley 1,665, leaves only); Bukit Timah (Ridley 8,961 and in 1890 & in 1907); Chan Chu Kang (Ridley in Nov. 1889); Pulau Damar (Mat in 1894).

BORNEO: Sarawak, Bau (Ridley 11,820); Matang (Ridley in VII–1903 & in VII–1905).

C. melanocarpus Ridl. was published with a meagre description in English in November 1893, that is, about a month and a half after the publication of *C. Lobbianus* Becc., so that the latter binomial has the priority. *C. brachystachys* Becc. was based on a fully developed fruiting spadix collected in Kuching in Sarawak, and as a fully developed fruiting spadix of *C. Lobbianus* was not available for him and as this species was not then recorded from Borneo, BECCARI thought that this Kuching material represented a new species. Later he completed the description of *C. brachystachys* by adding to it the description of the leaf which he thought to be of the same species but which really belongs to *C. conirostris* Becc. = *Cornera conirostris* (Becc.) Furtado.

The male flowers show some variations; some develop and shed their pollen when the perianth is well opened, while others shed pollen when the perianth is closed. In some neutral flowers a few pollen grains may be seen and so it is possible that these grains are able to fertilise the female flowers from the same spadix.

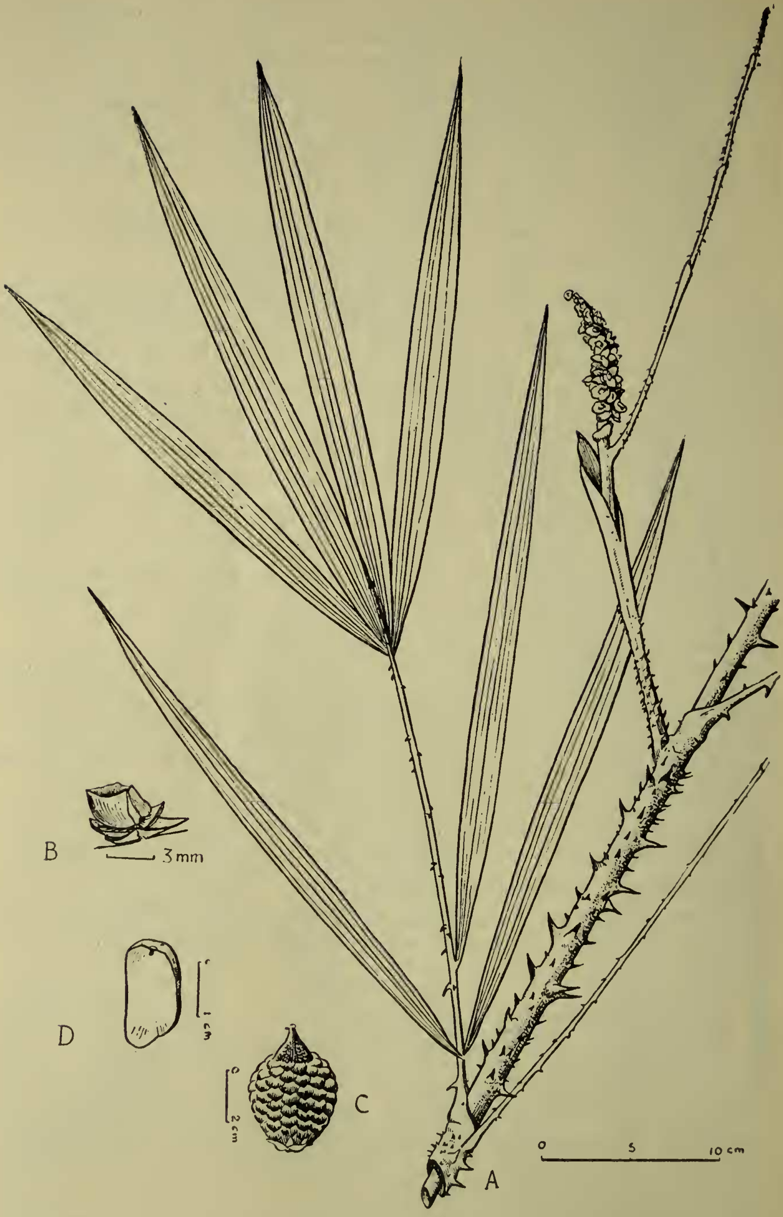
Female spadices sometimes also show various grades of abnormalities and the secondary spathes may be ligulate instead of being truncate as shown in the plate.

The syntypes of *C. Lobbiana* were collected in Singapore by Lobb and on Gunong Panti in Johore by King's collector.

3. **Cornera pycnocarpa** Furtado **spec. nov.**

Ab alteris hujus generis speciebus haec differt: aculeis vaginae frondalis minoribus paucioribus; petiolis basi minus aculeatis; foliolis paucioribus et minoribus, duobus apicalibus basi conspicue connatis; inflorescentiis partialibus spiculisque minoribus; fructibus obscure brunnescentibus, haud nigris politisque; albumine homogeneo vel superficialiter ruminato.

Caudex gracilis, scandens, caespitosus, 15 m. usque longus, cum vaginis circa 1·5 cm. in diam. *Vaginae* frondium flagelliferae, striatae, aculeis basi tumescentibus apicem versus valde angustatis, summo atrescentibus vel non, ascendentibus vel horizontalibus, solitariis vel interdum confluentibus, maximis 10 mm. longis, minimis 1 mm. usque



3. *Cornera pycnocarpa (Corner 30,293).*

A, Caudicis fragmentum cum folio et spadice. B, Involucrophorum cum involucro et spathella. C, Fructus. D, Semen verticaliter discissum (inversum).

longis armatae, apice oblique truncatae, infra petiolum geniculatae, in geniculo valde striatae parce aculeolatae vel non. *Ocrea* brevissima. *Frondes* subsessiles vel breviter petiolatae, 40 cm. longae, basin versus utrinsecus 1–2 foliolis suboppositis praeditae, apice in foliola 4 aequialta (duo centralia basi connata, altera inferiora libera) terminatae, secus rachidis dorsum aculeis reflexis 5 mm. longis armatae. *Foliola* circa 30 cm. longa, 3 cm. lata, lanceolata, 3–4 costulata, utrinque inermia, supra nervis transversalibus conspicuis subtus inconspicuis ornata apice penicillata.

Spadix femineus in appendicem flagelliformem brevem exeuns, inflorescentiam partialem unicam gerens, in parte pedunculari circa 20 cm. longus. *Spathae primariae:* basilaris unica fertilis, tubulosa, aculeolata, apice fissa, elongato-auriculiformis, summo abrupte acuminata; alterae spathae primariae infertiles, tubulares. *Inflorescentia partialis* 6 cm. longa, in latere dorsali scorpioideo reflexa floribus carens, in altero latere spiculis abbreviatis vel apicem versus floribus per circa 6 series congestis praedita. *Spathae secundariae* annulares vel in uno latere haud crescentes, apice truncatae scariosae; spathellae brevissimae vix visibiles. *Involucrophorum* cupuliforme; involucrum conforme. *Perianthium fructiferum* late campanulatum vel fere explanatum; segmenta calycis quam segmenta corollae latiora sed aequialta. *Fructus* elongato-ovoideus, apicem versus sensim attenuatus conoideus, circa 4 cm. longus, 2·5–3 cm. in diam.; squamis brunnescentibus, secus margines atrescentibus scariosis, dorso haud canaliculatis, per series verticales 15–18 dispositis. *Semen* ambitu ovale, applanatum, circa 12 mm. longum, 10 mm. latum, 8 mm. crassum; albumen aequabile vel superficialiter ruminatum; embryone basilare.

MALAYA: Kemaman, Ulu Bendong prope Kajang, alt. circa 150 m. (Corner 30,293).

This species is easily distinguished by its short leaves which are scarcely longer than the axillary spathes; by having 6–8 almost equal but inequidistant leaflets to each leaf, the four terminal leaflets forming a group; by having the two topmost leaflets shortly connate at the base; and by its homogeneous or superficially ruminate seeds.

In the specimens examined the spikelets are so small that the flowers appear to be seated directly on the axis of the branch. The male spadix has not yet been collected.

SCHIZOSPATHA Furtado **gen. nov.**

Palmae scandentes, flagelliferae, monoicae vel masculae. *Folia* ecirrifera, paripinnata. *Spadices* foliis paulo breviores, haud appendiculati, pauciramosi. *Spathae primariae* imbricatae, papyraceae, saepe inermes, indehiscentes, apice exsuccae, fragiles, loriformes. *Inflorescentiae partiales* breves, sessiles, spiculis paucis brevisque praeditae, spathis axillantibus breviores, basi spathae perforata exserentes. *Flores* in plantis monoicis uniquique feminei cum singulis masculis in eodem involucrophoro siti; flores masculi in plantis monoicis quam ei ex plantis masculis nonnihil minores. *Perianthium fructiferum* explanatum. *Fructus* squamiferentes, cum semine homogeneo.

DISTRIBUTIO: Genus adhuc monotypicum in Nova Guinea incolit.

SPECIMEN TYPICUM: Carr 13,123 (Herb. Singaporense).

Contrary to the rules I have indicated here a type specimen for the genus, instead of mentioning a binomial that would include the type specimen. The reason for adopting this procedure is that for the generic group represented by this type specimen an older specific epithet has the right of priority under this genus. The holotype of *Calamus setigerus* Burret is Carr 13,123, the duplicates of which are found mixed in Singapore. Should there be found any specific or generic differences between the specimen seen by Burrett and the one seen by me, the generic name will have to retained for the holotype studied by me in making the genus.

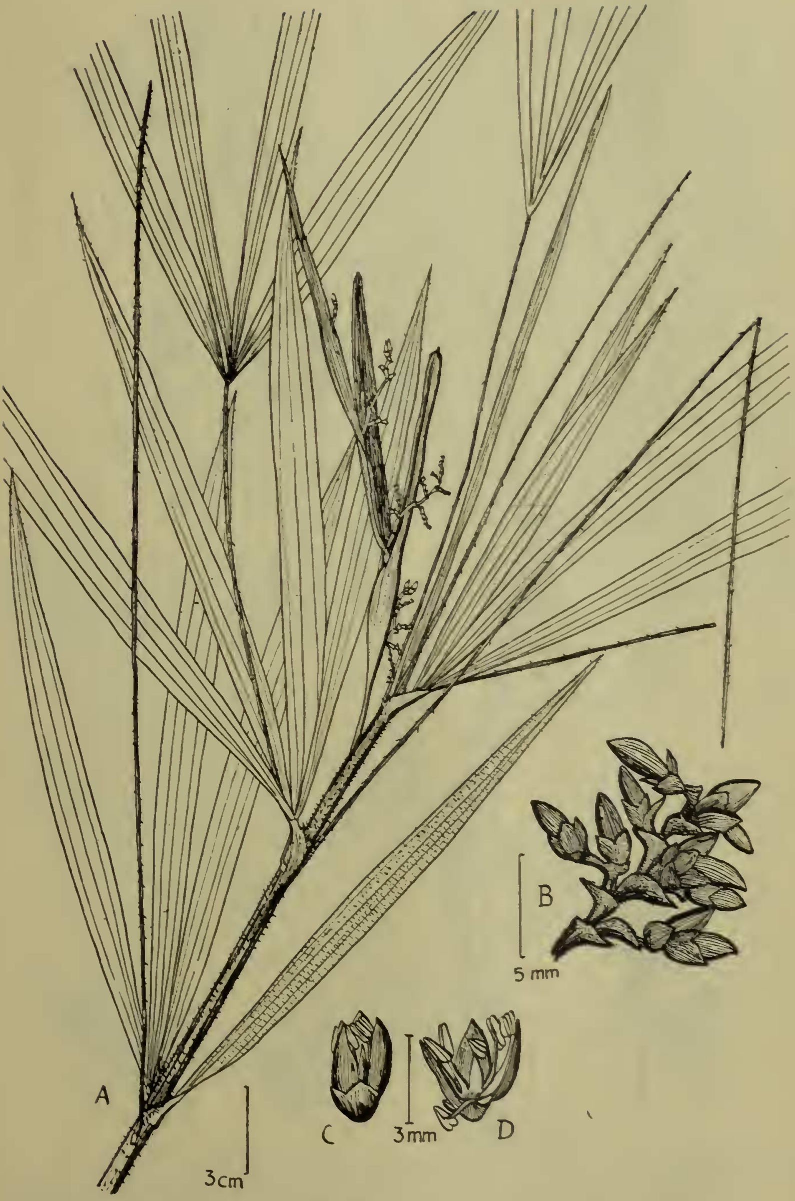
Burret does not note the peculiar emergence of the spadix branches in *C. setigerus,* while *C. anomalus,* which he says to be a close ally, appears to be a true Calamus species.

Schizospatha setigera (Burret) Furtado **comb. nov.**

Calamus setigerus Burrett in Notizbl. Bot. Gart. Berlin XII (1936) 320 (**basinym**).

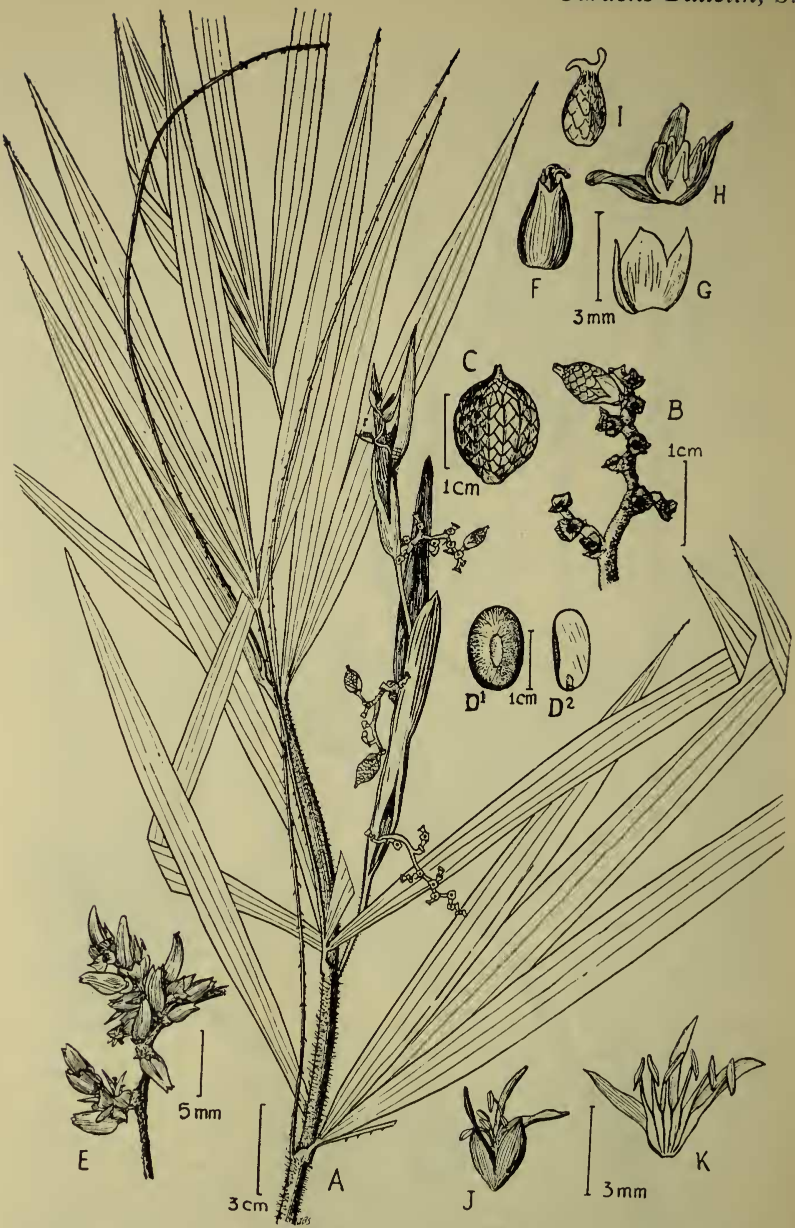
Caudex gracilis, scandens, probabiliter caespitosus, foliis exceptis omnino deciduo fusco-furfuraceus, circa 2 m. longus, cum vaginis 7–8 mm. in diam. *Vaginae* frondales flagelliferae, aculeolis minutis, 1–5 mm. longis, solitariis, numerosis, patentibus vel porrectis, atrescentibus. basi tumidis armatae, apice oblique truncatae, infra petioli basin geniculo inermi praeditae. *Ocrea* brevissima, coriacea, aculeolis conformibus paulo longioribus dense armata. *Folia* sessilia, ecirrifera, 25–33 cm. longa, paripinnata vel rarissime imparipinnata, utrinsecus foliolis 4 per greges 2 dispositis; 2 foliola in gregi basilari inter se valde approximata, opposita, longissima, 20–25 cm. longa, 15–22 mm. lata, anguste lanceolata, sub-3-costulata, utrinque inermia, secus margines tantum remote setosa; reliqua foliola omnino 4, rarissime 5, apice folii dense juxtaposita, basalibus breviora, conformia, circa 15–17 cm. longa, 15–22 mm. lata, dua (vel rarissime tria) centralia basi breviter connata; nervis folioli transversalibus utrinque conspicuis; rachides inter foliola basilaria et apicalia nudae, subtus aculeis solitariis reduncis armatae.

Spadix monoicus gracilis, folio paulo brevior, sed rachide folii longior, 20–30 cm. longus, in pedunculo aculeolatus, ceterus inermis vel rarissime apicem versus in axi obscure aculeolatus, ramos 3–4 (praeter apicales ramos diminutos) gerens. *Spathae primariae* 4–6 imbricatae, plerumque in apicem loriformem primum involutam dein explanatam exeuntes (in parte spadicis abnormali apicali spathae primariae minutae, cymbiformes, apertae, basi amplectentes, ante anthesin in unica spatha cymbiforme longa saepe inclusae); basalis spatha fertilis ventricosa, vel infertilis indundibuliformis haud ventricosa, basin versus coriacea inermis vel aculeolata, superne exsuccosa, plerumque inermis, rarissime aculeis paucis, obscuris armata, alterae spathae (apicalibus minutis abnormalibus exclusis) imbricatae, ventricosae, gradatim minores, exsuccosae, inermes, saepe fragiles. *Rami primarii* omnino dense fusco furfuracei, axi angulares, breves, sessiles, 3–4, basi spathae perforata exserti, reflexi; basilares alteris longiores, ad 2–5 cm. usque longi, utrinsecus 3–4 spiculis alternatis axi flexuosis angularibus praediti (rami in parte spadicis abnormali in spathis cymbiformibus



4. *Schizospatha setigera (Carr 14,421 ♂).*

A, Caudicis fragmentum cum foliis et spadice masculo. B, Inflorescentia partialis. C, Flos masculus. D, Idem apertus ut staminum dispositio appareat.



5. *Schizospatha setigera (A–D: Carr 12,123; E–K: Carr 14,422)*

A, Caudicis fragmentum cum foliis spadiceque. B, Inflorescentia partialis cum fructu immaturo. C, Fructus maturus. D^1, Semen. D^2, Idem verticaliter discissum. E, Spicula ut flores feminei et masculi appareant. F, Flos femineus. G, Sepala ejusdem. H, Flos femineus apertus ut petala et staminodia appareant. I, Ovarium ejusdem. J, Flos masculus ex eadem (E) spicula. K, Flos idem apertus ut petala et stamina appareant.

manentes). *Spathae secundariae* breves, stricte tubulares, apice ligulatae; spathellis conformibus. *Involucrophorum* calyculiforme, bidentatum; involucrum conforme, irregulariter 2–3 lobatum, interdum ad basin imbricatum. *Areola* floris masculi lunata. *Flores feminei* circa 3–3·5 mm. longi, 1·5 mm. in diam., elongato-ovati; calyx quam corolla paulo brevior, in lobis striatis, ovato rotundatis, mucronatis divisus: corolla 3-partita, cum lobis striatis; staminodia membranacea, 6, basi ½-connata. *Flores acolyti* masculi, ante femineorum anthesim pro majore numero maturi, 3–3·5 mm. longi, 1·5 mm. in diam., elliptici: calyx quam corolla ½-brevior, lobis ellipticis striatis praeditus; corollae lobi lato lineares; stamina 6, basi ½-connata. *Perianthium fructiferum* explanatum. *Fructus* oblongus, sine rostro minuto 14 mm. altus, 10–12 mm. in diam.; squamis per series 14–15 verticales dispositis, obscure stramineis, infra margines luteo-lineatis, secus margines et apice atrescentibus, dorso canaliculatis. *Semen* 11–12 mm. altum, 9–10 mm. latum, 6–7 mm. crassum, cum fovea lanceolata; albumine homogeneo; embryone basilari.

Spadix masculus femineo similis, sed gracilior. *Spathellae* anguste ligulatae. *Involucrum* minutum, vix exsertum, concavulum, lobis acutis 3 praeditum. *Flores masculi* circa 3 mm. longi; calyx striatus, 3-lobatus, 1/3 brevior quam corolla; lobi corollae striati elliptici vel elongato ovati, apice acuti; stamina 6, basi breviter connata.

NOVA GUINEA: Papua, Boridi, circa alt. 1500 m. (Carr 14,421 male, & 14,422 monoecious, & 13,123 male and fruiting mixed).

The collector remarked that the stamens in the monoecious spadix were smaller than those in the male spadix, and that they were always white in the fresh state.